What is claimed is:

1. A method of generating calibrated optical pulses in a quantum key distribution (QKD) system, comprising:

sending first optical pulses having a fixed pulse width and a fixed power through a variable optical attenuator (VOA) for different VOA settings, and relating respective transmitted powers of the first optical pulses to respective said VOA settings;

setting the VOA to a maximum attenuation;

directing second optical pulses having varying pulse widths through the VOA and relating respective transmitted powers of the second optical pulses to the respective varying pulse widths;

determining a first average power required for third optical pulses when emitted by a light source in order to obtain a second average power for each third optical pulse at a receiver of the QKD system;

determining a calibrated attenuation setting of the VOA that results each third optical pulse having the first average power;

automatically setting the VOA to the calibrated attenuation setting; and

sending the third optical pulses through the VOA to create calibrated optical pulses.

2. The method according to claim 1, wherein the receiver of the QKD system is connected to an optical radiation source by an optical channel, and including:

disconnecting the optical channel downstream of the VOA to measure the transmitted powers of the first optical pulses using a power meter connected to an open end of the optical channel downstream of the VOA; and

reconnecting the optical channel prior to creating the calibrated optical pulses.

3. The method of claim 1, wherein the receiver has an integration time T_I, the third optical pulses have a repetition rate r, a pulse width w, and further including ensuring calibration by:

periodically measuring the average number of photons m per third optical pulse using a single-photon detector; and

if the measured average number of photons m per third optical pulse is not equal to a desired average number (m_D) of photons per pulse, then changing at least one of: (i) the integration time T_I, (ii) the pulse repetition rate r, (iii) the optical pulse width w, and (iv) the VOA setting.

4. The method of claim 3, further including: comparing the measured average number of photons m per third optical pulse to a threshold average number of photons per optical pulse m_T to ensure quantum security of the QKD system.

5. A method of generating calibrated optical pulses for a quantum key distribution (QKD) system, comprising:

generating first optical pulses having a fixed pulse width and a fixed power using an optical radiation source;

passing the first pulses through a variable optical attenuator (VOA) for different VOA settings, relating respective transmitted powers of the first optical pulses to respective said VOA settings, and storing the related transmitted powers and VOA settings in a controller;

setting the VOA to a maximum attenuation by operation of the controller;

generating second optical pulses having varying pulse widths using the optical radiation source and sending the second pulses through the VOA;

relating respective transmitted powers of the second optical pulses to the respective varying pulse widths and storing the results in the controller;

determining an average power needed to be incident a receiver of the QKD system;

setting the VOA to a calibrated setting that would result in the receiver receiving the needed average power via third radiation pulses; and

sending the third optical pulses through the VOA to create a calibrated set of optical pulses.

6. The method of claim 5, further including:

disconnecting an optical channel connecting the optical radiation source with the receiver in order to measure the transmitted powers of the first optical pulses upon passing through the VOA for the respective setting; and

reconnecting the optical channel prior to sending the third optical pulses through the VOA when creating the calibrated set of optical pulses.

7. A method of generating calibrated pulses for a quantum key distribution (QKD) system using a variable optical attenuator (VOA), comprising:

a) relating transmitted powers of first optical pulses passed through the VOA to respective VOA settings;

b) relating transmitted powers of second optical pulses having varying pulse widths and passed through the VOA set at a fixed attenuation, to the respective varying pulse widths; and

c) based on the relations established in a) and b), setting the VOA to provide calibrated pulses having a select average power at a receiver based on third optical pulses output from a light source and having a select average power.

8. A one-way calibrated QKD system comprising:

first and second stations optically coupled via an optical channel;

an optical radiation source located in the first station and capable of generating optical pulses that travel in the optical channel between the stations;

a variable optical attenuator (VOA) arranged in the first station downstream of the optical radiation source;

a VOA driver operatively couple to the VOA;

an electrical meter operatively coupled to the VOA; and

a controller operatively coupled to the VOA, the VOA driver, the optical radiation source and the electrical meter; and

wherein the VOA is automatically set by the controller using a calibration table and an average power expected at a receiver in the second station in order to produce calibrated optical pulses from the optical pulses output by the optical radiation source.

9. The QKD system of claim 8, wherein the optical pulses emitted by the optical radiation source have a pulse width in the range between about 10ps and about 10ns, and an optical pulse rate between about 100kHz and about 20MHz.

10. A two-way calibrated QKD system comprising:

first and second stations optically coupled via an optical channel;

an optical radiation source located in the first station and capable of generating optical pulses that travel in the optical channel between the stations;

a receiving detector located in the first station;

a variable optical attenuator (VOA) arranged in the second station;

a VOA driver arranged in the second station and operatively couple to the VOA;

an electrical meter arranged in the second station and operatively coupled to the VOA; and

a controller operatively coupled to the VOA, the VOA driver, the optical radiation source and the electrical meter; and

wherein the VOA is automatically set by the controller using a calibration table stored therein and an average power expected the receiving detector in the first station to produce calibrated optical pulses from the optical pulses output by the optical radiation source and sent to the second station to be modulated and returned to the first station.

11. The QKD system of claim 8, wherein the optical pulses emitted by the optical radiation source have a pulse width in the range between about 10 ps and about 10ns, and an optical pulse rate between about 100kHz and about 20 MHz.